



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,337	10/28/2003	Noriyuki Shiina	CU-3418	5598
26530	7590	06/30/2005	EXAMINER	
LADAS & PARRY LLP 224 SOUTH MICHIGAN AVENUE SUITE 1600 CHICAGO, IL 60604			PATTERSON, MARC A	
			ART UNIT	PAPER NUMBER
			1772	

DATE MAILED: 06/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/695,337	SHIIINA, NORIYUKI	
	Examiner	Art Unit	
	Marc A Patterson	1772	

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) Responsive to communication(s) filed on \_\_\_\_\_.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4) Claim(s) 1-34 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-34 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
     1. Certified copies of the priority documents have been received.  
     2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
     3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date _____ 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) 6) <input type="checkbox"/> Other: _____
---	---

**DETAILED ACTION**

***Claim Objections***

1. Claims 2 and 19 are objected to because of the following informalities: The meaning of the phrase ‘in a state that the inorganic lamellar is subjected completely to delamination’ is unclear. Appropriate correction is required.
2. Claims 7 and 24 are objected to because of the following informalities: The meaning of the term ‘crayey’ is unclear. Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1 – 3, 7 – 8, 12, 14, 16 – 20, 24 – 25, 29, 31 and 33 – 34 are rejected under 35 U.S.C. 102(b) as being anticipated by Curtis (U.S. Patent Publication No. 2001/0046574).

With regard to Claims 1, 7 – 8, 18 and 24 – 25, Curtis discloses a lamination product (laminate; paragraph 0027) comprising an outermost layer (exterior layer; paragraph 0027), paper base (paperboard, therefore comprising paper; paragraph 0029) and barrier layer (barrier material; paragraph 0029); the barrier layer is made of a resin composition comprising a resin and an inorganic compound (polymeric nanocomposite blend; paragraph 0029); the inorganic compound is lamellar (layered silicate; paragraph 0032) and the barrier layer is laminated by an

extrusion method (paragraph 0034) which is extrusion coating (paragraph 0029) and is therefore a coating.

With regard to Claims 2 – 3 and 19 – 20, each layer of the lamellar compound disclosed by Curtis has a size of 30 nm (30 Angstroms; paragraph 0013).

With regard to Claims 12 and 29, the outermost layer disclosed by Curtis comprises a polyolefin resin having heat sealability (low density polyethylene; paragraph 0027).

With regard to Claims 14 and 31, the lamination product disclosed by Curtis further comprises an innermost polyolefin resin having heat sealability (low density polyethylene, in an alternative embodiment of Figure 11).

With regard to Claims 16 – 17 and 33 – 34, Curtis discloses the use of adhesive layers to facilitate the adhesion between the various layers (paragraph 0034); Curtis therefore discloses the use of adhesive resin layers on either side of the barrier layer.

#### *Claim Rejections - 35 USC § 103*

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 13 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Curtis (U.S. Patent Publication No. 2001/0046574).

Curtis et al disclose a laminate comprising paperboard as discussed above. With regard to Claims 13 and 30, Curtis et al fail to disclose a paperboard having a basis weight of 80 to 600

Art Unit: 1772

g/m<sup>2</sup>. However, Curtis et al disclose a weight that is selected depending on the desired grade of paperboard (paragraph 0027). Therefore, one of ordinary skill in the art would have recognized the utility of varying the basis weight to obtain the desired grade. Therefore, the grade would be readily determined by through routine optimization of the basis weight by one having ordinary skill in the art depending on the desired use of the end product as taught by Curtis et al.

It therefore would be obvious for one of ordinary skill in the art to vary the basis weight in order to obtain the desired grade, since the grade would be readily determined through routine optimization by one having ordinary skill in the art depending on the desired end result as shown by Curtis et al.

7. Claims 4 – 5, 10 – 11, 21 – 22 and 27 – 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Curtis (U.S. Patent Publication No. 2001/0046574) in view of Mueller et al (U.S. Patent No. 6,403,231 B1).

Curtis discloses a laminate comprising an inorganic lamellar compound as discussed above. The inorganic compound is comprised in a polymer nanocomposite with a polyamide (paragraph 0032 of Curtis). With regard to Claims 4 – 5, 10 – 11, 21 – 22 and 27 – 28, Curtis fails to disclose an inorganic lamellar compound comprising nylon MXD 6 and having an aspect ratio of 50 and a cation exchange capacity of not less than 30 milliequivalent / 100 grams.

Mueller et al teach a laminate (at least one layer; column 3, lines 21 – 27) comprising an inorganic lamellar compound (silicate layers having spacing; column 3, lines 45 – 49) comprising nylon MXD6 (column 4, lines 14 – 15) and having an aspect ratio of 50 (column 3, lines 40 – 44) and a cation exchange capacity of not less than 30 milliequivalent / 100 grams

(column 7, lines 40 – 44) for the purpose of obtaining a laminate that is useful for packaging (column 7, lines 61 – 66). One of ordinary skill in the art would therefore have recognized the advantage of providing for the an inorganic lamellar compound comprising nylon MXD 6 and having an aspect ratio of 50 and a cation exchange capacity of not less than 30 milliequivalent / 100 grams of Mueller et al in Curtis, which is a laminate, depending on the desired application to packaging of the end product.

It therefore would have been obvious for one of ordinary skill in the art at the time Applicant's invention was made to have provided for an inorganic lamellar compound comprising nylon MXD 6 and having an aspect ratio of 50 and a cation exchange capacity of not less than 30 milliequivalent / 100 grams in Curtis in order to obtain a laminate that is useful for packaging as taught by Mueller et al.

8. Claims 6 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Curtis (U.S. Patent Publication No. 2001/0046574) in view of Ross et al (U.S. Patent No. 6,521,690 B1).

Curtis discloses a laminate comprising an inorganic lamellar compound as discussed above. With regard to Claims 6 and 23, Curtis fails to disclose a compound that is treated with an organic ammonium salt.

Ross et al teach an inorganic lamellar compound (layered silicate; column 5, lines 46 – 49) that is treated with an organic ammonium salt (column 5, lines 9 – 16) for the purpose of obtaining a compound that is highly dispersible in a wide variety of polymers (column 5, lines 6 – 8). One of ordinary skill in the art would therefore have recognized the advantage of providing

Art Unit: 1772

for the organic ammonium salt of Ross et al in Curtis, which comprises an inorganic lamellar compound, depending on the desired dispersibility of the end product.

It therefore would have been obvious for one of ordinary skill in the art at the time Applicant's invention was made to have provided for an organic ammonium salt in Curtis in order to obtain a compound that is highly dispersible in a wide variety of polymers as taught by Ross et al.

9. Claims 9 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Curtis (U.S. Patent Publication No. 2001/0046574) in view of Usuki et al (U.S. Patent No. 4,889,885).

Curtis discloses a laminate comprising an inorganic lamellar compound and resin as discussed above. With regard to Claims 9 and 26, Curtis fails to disclose a volume ratio of inorganic lamellar compound to resin of 5/95 to 40/60.

Usuki et al teaches that the amount of inorganic lamellar compound (silicate; column 4, lines 40 – 42) in a polymer composite (dispersed in polyamide; column 4, lines 40 – 42) is selected depending on the desired reinforcing effect and molding property (column 4, lines 45 – 50). Therefore, one of ordinary skill in the art would have recognized the utility of varying the amount of inorganic lamellar compound to obtain the desired reinforcing effect and molding property. Therefore, the reinforcing effect and molding property of Curtis would be readily determined by through routine optimization of the amount of inorganic lamellar compound by one having ordinary skill in the art depending on the desired use of the end product as taught by Usuki et al.

It therefore would be obvious for one of ordinary skill in the art to vary the amount of inorganic lamellar compound, and therefore the volume ratio, in order to obtain the desired reinforcing effect and molding property, since the reinforcing effect and molding property would be readily determined through routine optimization by one having ordinary skill in the art depending on the desired end result as shown by Usuki et al.

10. Claims 15 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Curtis (U.S. Patent Publication No. 2001/0046574) in view of Reighard et al (U.S. Patent Publication No. 2004/0005389 A1).

Curtis discloses a laminate comprising an inorganic lamellar compound as discussed above. The innermost layer of the laminate is low density polyethylene (Figure 11). With regard to Claims 15 and 32, Curtis fails to disclose an innermost layer comprising an ethylene – olefin copolymer polymerized with a metallocene catalyst.

Reighard et al teach a low density polyethylene copolymer polymerized with a metallocene catalyst (metallocene low density polyethylene; paragraph 0014) as the innermost layer of a laminate (final layer; paragraph 0014) for the purpose of obtaining a laminate having improved sealing (paragraph 0014). One of ordinary skill in the art would therefore have recognized the advantage of providing for the ethylene – olefin copolymer polymerized with a metallocene catalyst of Reighard et al in Curtis, which comprises low density polyethylene, depending on the desired sealing of the end product.

It therefore would have been obvious for one of ordinary skill in the art at the time Applicant's invention was made to have provided for ethylene – olefin copolymer polymerized

Art Unit: 1772

with a metallocene catalyst in Curtis in order to obtain improved sealing as taught by Reighard et al.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc A Patterson whose telephone number is 571-272-1497. The examiner can normally be reached on Mon - Fri 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon can be reached on 571-272-1498. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Marc Patterson 6/27/05*

Marc A. Patterson, PhD.  
Examiner  
Art Unit 1772